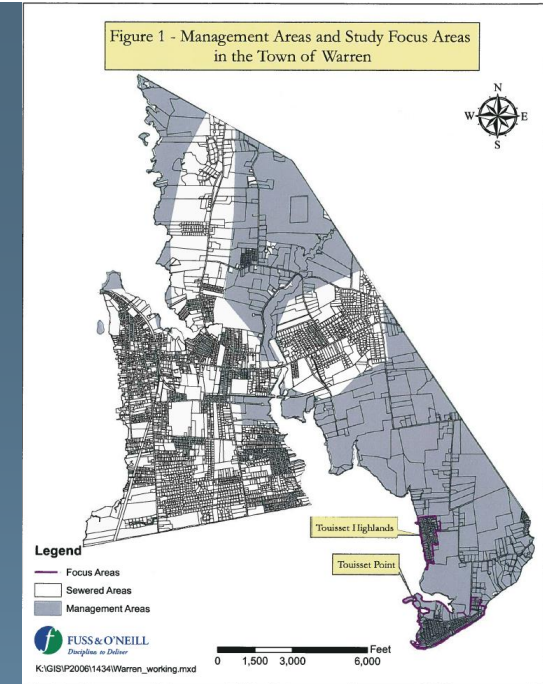


Presentation to Town of Warren



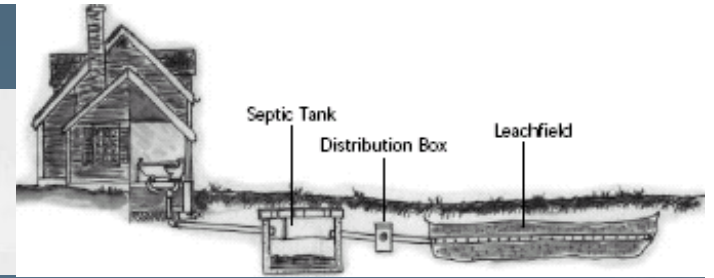
Onsite Wastewater Management Plan

February 10, 2009



FUSS & O'NEILL
Disciplines to Deliver

Goals & Objectives



- Extension of the work done for the *Touisset Point and Highlands Water Supply and Impact Study*.
 - Address a significant source of nitrogen.
 - Facilitate replacement of cesspools and other ISDS (OWTS) of concern.
 - Begin to address RIDEM cesspool phase-out requirements.
- \$ Provide financial assistance to homeowners.**



Impact Study Recommended Plan

- ISDS upgrade assistance program.
- Operation and maintenance program.
- Financial assistance.
- Analysis of water supply improvement options.
- Integrated monitoring program.
- Zoning ordinance revision.



What's an OWMP



Financial assistance for upgrade of cesspools and other substandard systems

- A. *Description of the management area.*
- B. *Description of the community assistance program for ISDS repair/replacement.*
- C. *Method to ensure or encourage regular ISDS maintenance in the management area.*
- D. *Financial analysis*
- E. *Designated community official(s) to manage and administer the program and implement the plan.*
- F. *Description of the method for disposal of septage generated by maintenance activities to be conducted as part of the program.*



OWMP—Criterion A



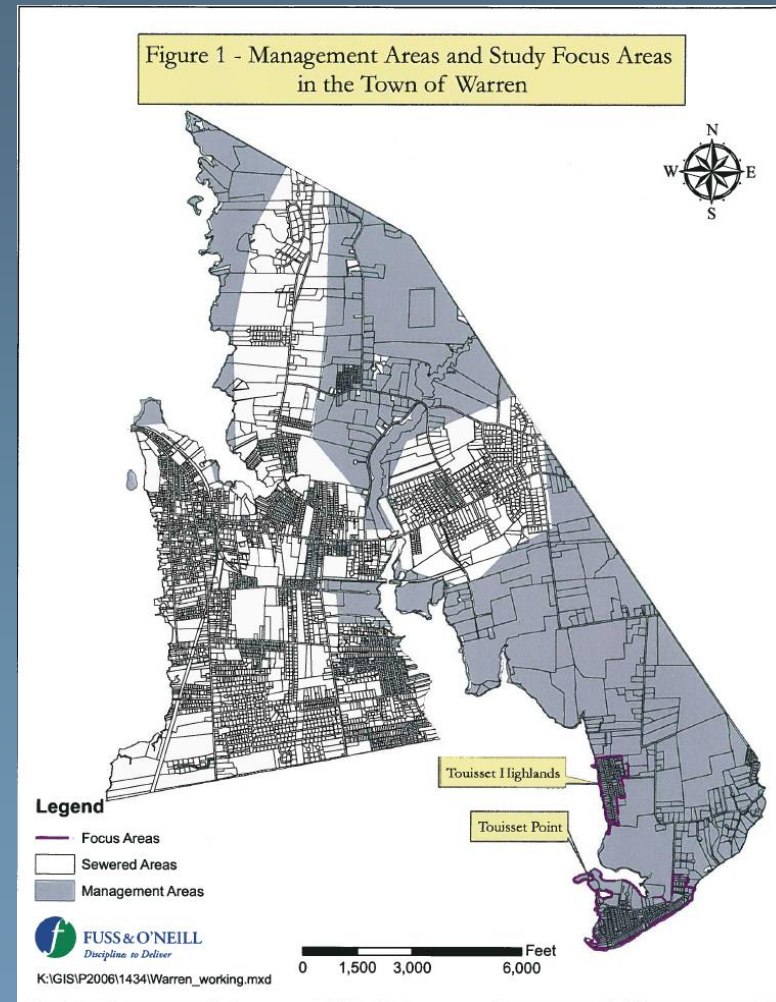
A. Description of the management area.

- Townwide with focus on Touisset
- Touisset area has approximately 86 cesspools
- Failure rate of about 1% per year
- Approximately 100 upgrades of 198 systems



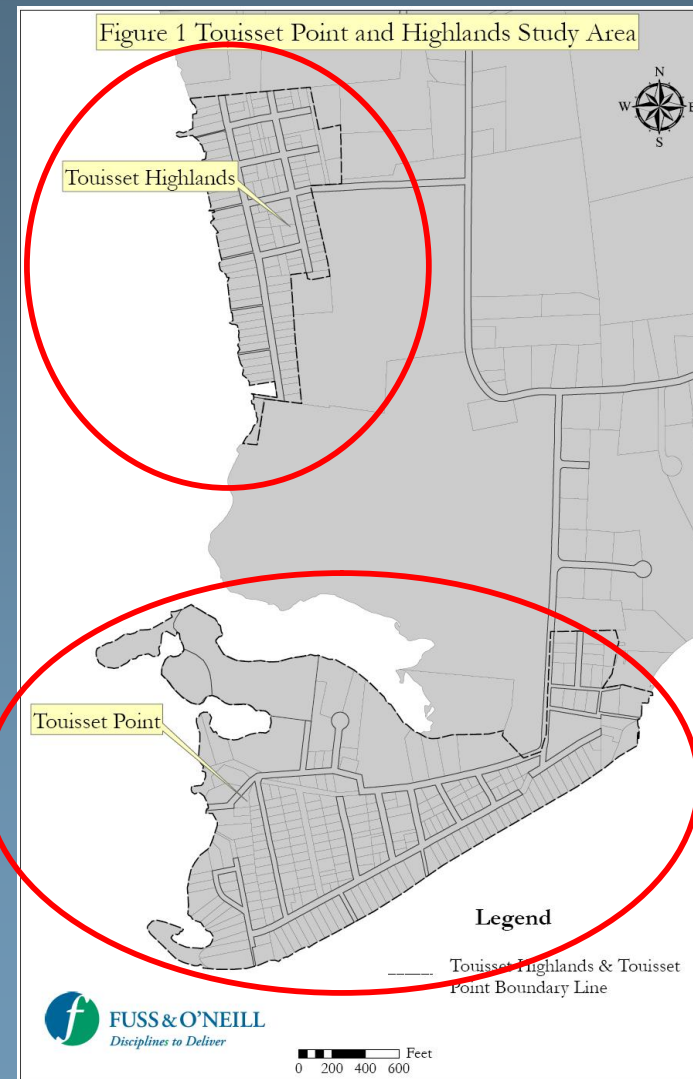
Study Area—Townwide

- Study area includes the unsewered areas of the Town
- Whole Town is eligible for financial assistance



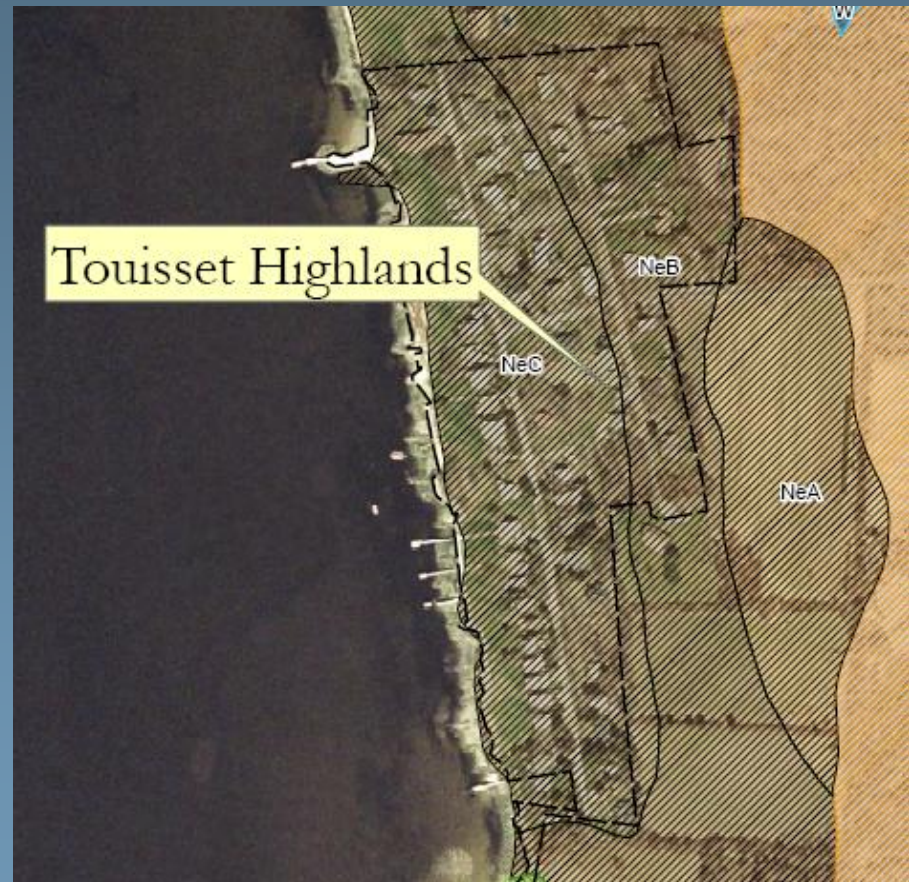
Focus Area— Touisset Point & Highlands

We focused on Touisset Point and Highlands due to the concentration of onsite systems.



ISDS & Well Challenges

Soils are difficult and ISDSs need to be carefully designed and installed.

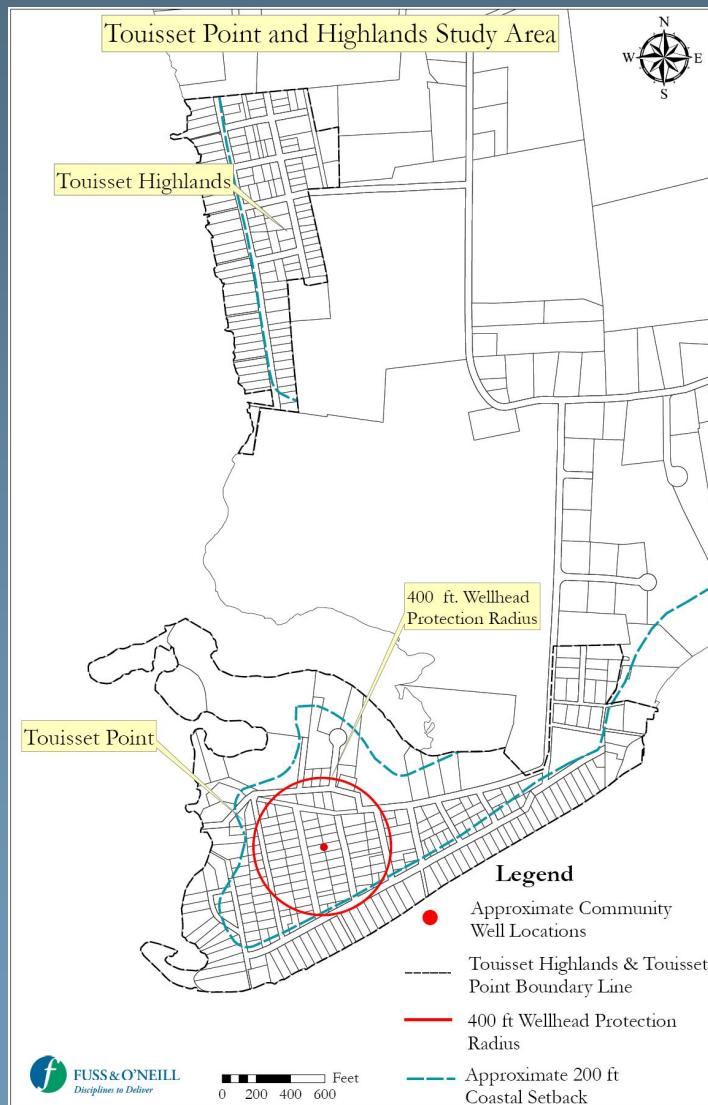


ISDS & Well Challenges

Soils are difficult and ISDSs need to be carefully designed and installed.



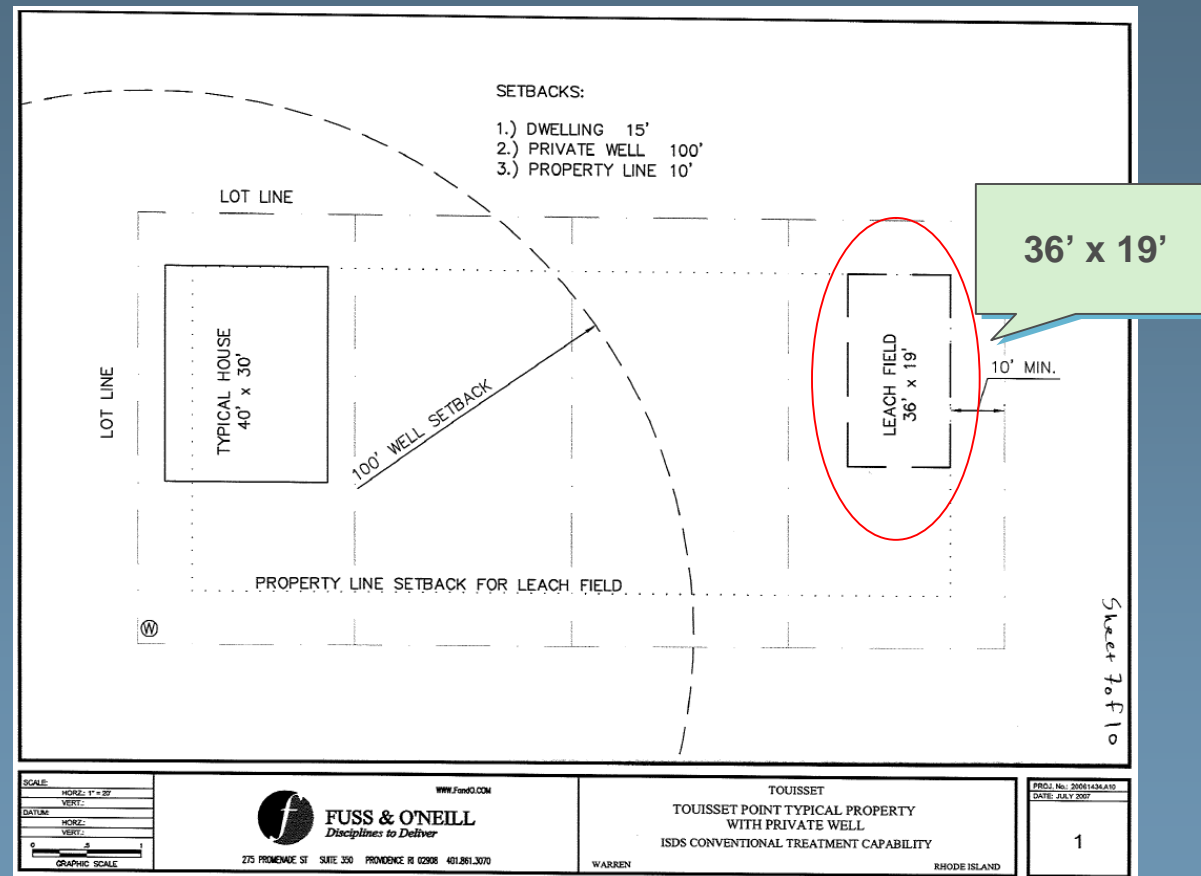
ISDS & Well Challenges



- Homes are proximal to sensitive resources.
- Many ISDSs in Touisset are cesspools.
- Cesspools will need to be:
 - *Inspected by January 1, 2012.*
 - *Replaced by January 1, 2013.*
- Specifics of the program are being worked out by DEM, including enforcement.



Carrying Capacity with Private Wells



Four 3,000 sqft lots are needed in order to meet proper setbacks from wells.



Well Water Problems



Touisset Point Water Trust Consumer Confidence Report - Nitrate and Sodium 2001-2006

Year	Nitrate (mg/L)		Sodium (mg/L)	
	Well 1	Well 2	Well 1	Well 2
2001	6.8	5.4	139	80.5
2002	6.3	6.5	190	95.8
2003	6.5	6.5	98.5	120.2
2004	7.08	6.57	105	87.1
2005	6.6	6.6	73.8	80.3
2006	6.2	6.3	240	115

NO_x Range: 5.4 – 7.08

Na Range: 73.8 – 240

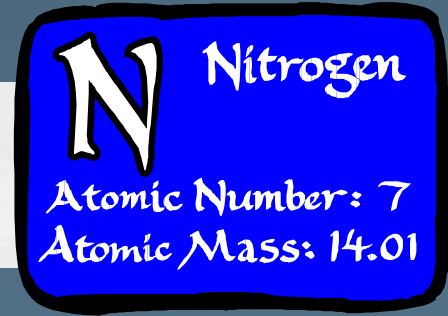
NO VIOLATIONS FOUND

HOWEVER

Levels of nitrate and sodium in the TPWT well water could be characterized as fairly strong bellwethers of an impending impairment.



Nitrates in Context

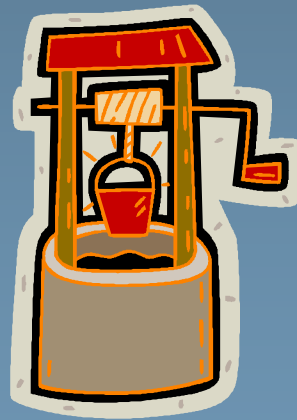


- Levels of nitrate greater than 10 mg/L are known to cause Blue Baby Syndrome.
- Nitrate levels in the Kickemuit Reservoir (not River) are 0.8 mg/L.
- A number of states have established preventative action limits for nitrates of 2.0 mg/L for nitrate.
- Nitrate is known to cause water quality degradation in saltwater systems at levels as low as 0.5 mg/L.



Touisset Highlands

- Wells are dug deeper—an average of 150 ft.
- No data on quality.



What are the Options?



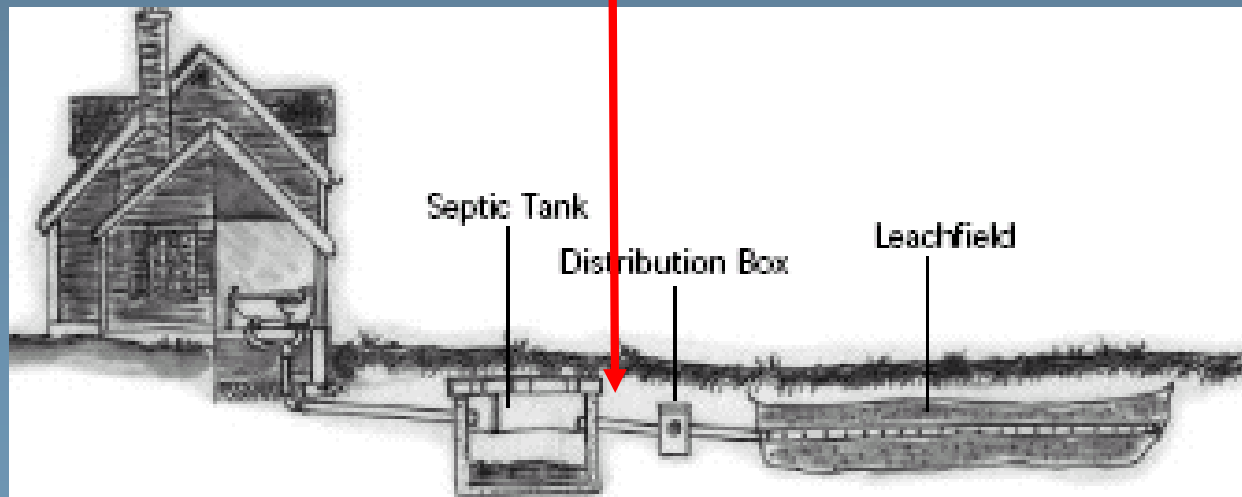
Description of Alternatives

- **I&A Systems:** Prioritized upgrades, on-going management, and financial assistance.
- **Community System:** Installation of a small wastewater treatment plant near the study area.
- **Conventional Sewers:** Hook-up to Town's existing sewer system. (Probably not feasible.)



What's an I&A System?

An ISDS where a component is inserted after the septic tank to improve wastewater treatment



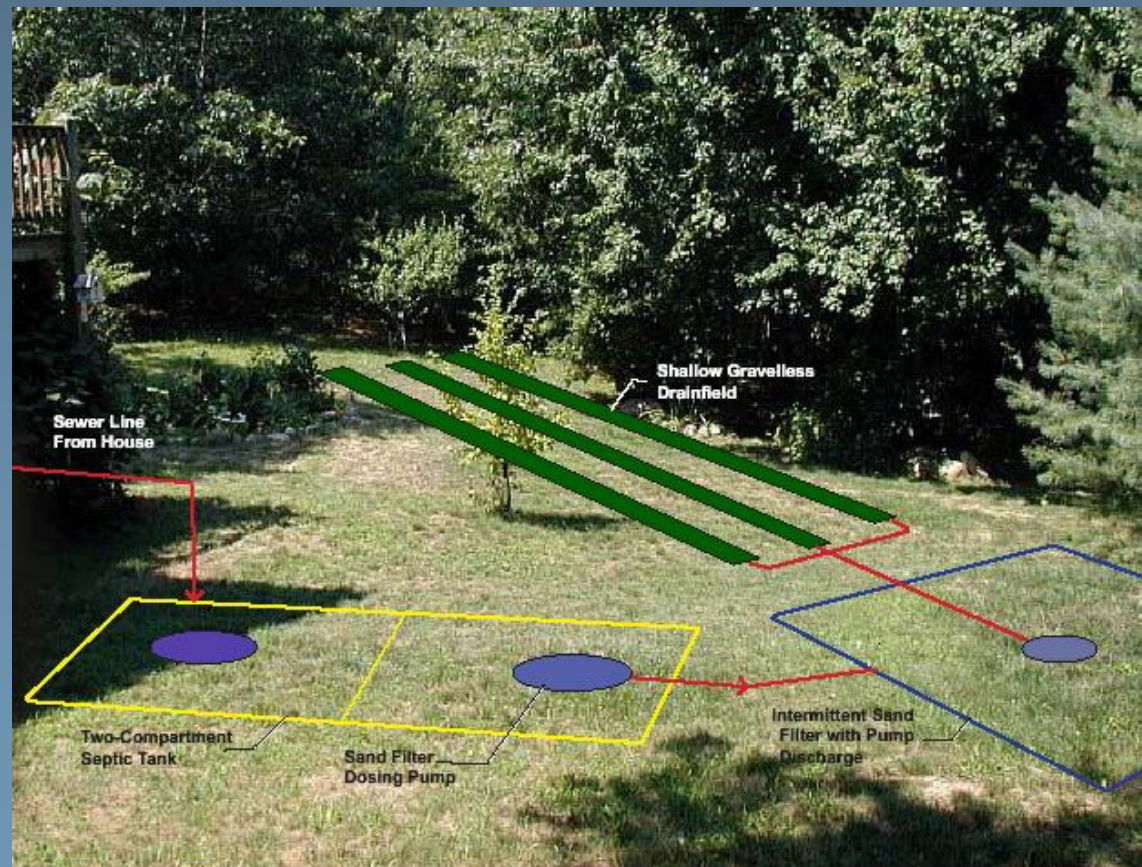
Example I&A Systems

Bottomless sand filters reduce disposal area.

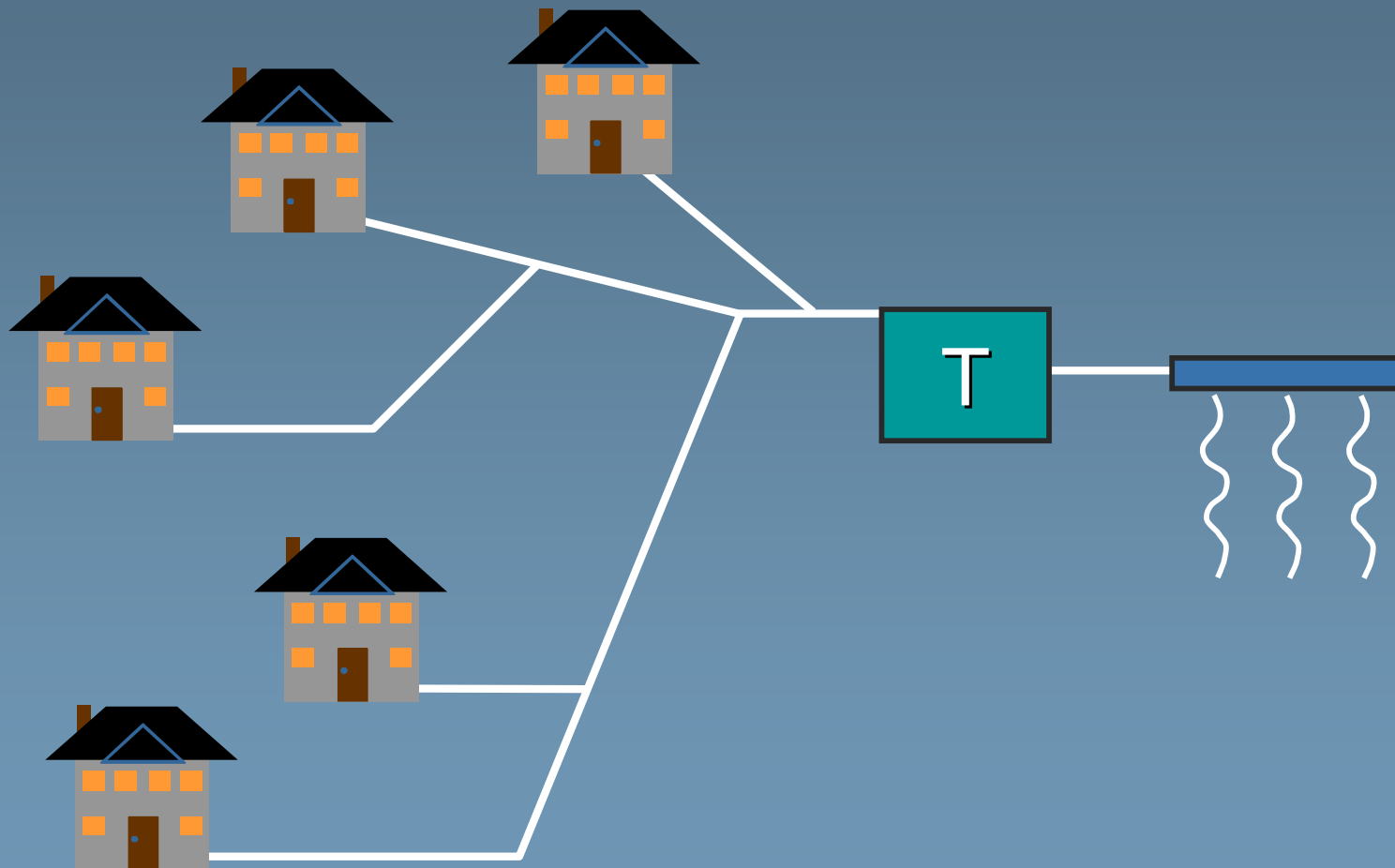


Example I&A Systems

Pressurized Shallow Narrow Drainfield



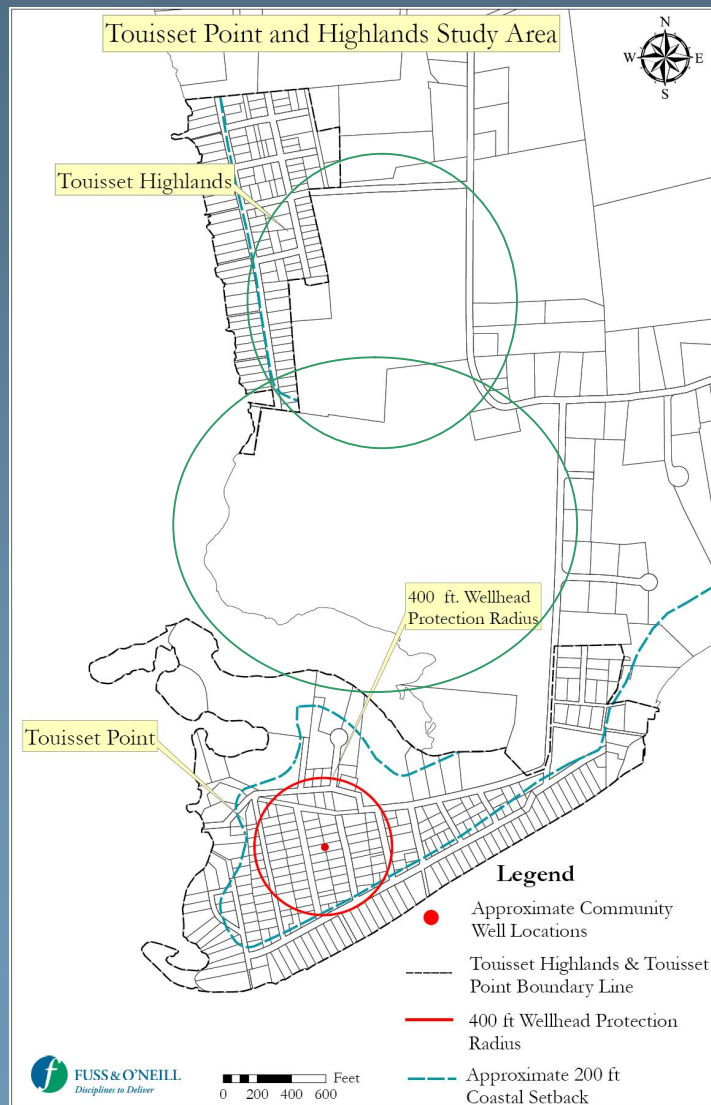
Community System



Community Treatment Plant



Land for a Small Treatment Plant



- Open space in the area is very limited.
- There is no Town-owned land in the study area.
- There are two open lots appropriately sized for a community system.

OWMP—Criterion D



D. Financial analysis:

- Conceptual opinions of cost for sewers, community systems, and ISDSs upgrades.



Potential Solutions Analysis

Description of Alternatives and Rough Cost

- **I&A Systems:** Prioritized upgrades, on-going management, and financial assistance. (\$2½ - 6 million; grants *may* be available to defray costs.)
- **Community System:** Installation of a small wastewater treatment plant near the study area. (\$10 million.)
- **Conventional Sewers:** Hook-up to Town's existing sewer system. (\$12 million + treatment upgrade at plant *if feasible*.)

Table 4
Touisset Wastewater Alternatives
Selection Factors

Alternative	Infrastructure Cost	Operation & Maintenance Cost	Town Responsibility	Land Required	Development Pressure	Funding Options	Water Line	Improve Water Quality
I&A Systems	M	L	L	No	L	CSSLP Local Bond Grants	Limited reduction in need for I&A systems	M
Community system	H	H	H	Yes	L	SRF Local Bond Grants	Unnecessary	H
Conventional Sewer	M-H	H	H	Limited (Pump stations)	H	SRF Local Bond	Unnecessary	H



OWMP—Criterion B



B. Description of the community assistance program for ISDS repair/replacement.

- CSSLP provides 2% loans for 10-year term up to \$20,000.
- Available for engineering design and system installation.
- Includes substandard and failed systems.
- Advertise via the web and a fact sheet.
- RI Housing will administer the program.



OWMP—Criterion C



C. Method to ensure or encourage regular ISDS maintenance in the management area.

- Continue pumpout subsidy.
- Develop an ISDS inspection and maintenance program—especially for innovative and alternative systems.
- Reduce the cost by moving to an inspection-based program.



OWMP—Criterion F



F. Description of the method for disposal of septage generated by maintenance activities to be conducted as part of the program.

- Continue to use the Warren Wastewater Treatment Plant.



OWMP—Criterion E



E. Designated community official(s) to manage and administer the program and implement the plan.

- Town planner will be responsible for CSSLP coordination at the Town level.



Implementation of the Impact Study Recommendations:

Impact Study Recommendation	Status
ISDS upgrade assistance program	<ul style="list-style-type: none">• CSSLP/OWMP• Federal Earmark
Operation and maintenance program	<ul style="list-style-type: none">• Applied for state grant to develop
Financial assistance	<ul style="list-style-type: none">• CSSLP/OWMP• Federal Earmark
Analysis of water supply improvement options	<ul style="list-style-type: none">• No further effort at this time
Integrated monitoring program	<ul style="list-style-type: none">• Applied for state grant to develop
Zoning ordinance revision	<ul style="list-style-type: none">• No further effort at this time

